

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number
WO 2005/044086 A3

(51) International Patent Classification⁷:

C12Q 1/68

(81)

Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

(21) International Application Number:

PCT/US2004/035929

(22) International Filing Date: 29 October 2004 (29.10.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/515,735 30 October 2003 (30.10.2003) US

(71) Applicant (for all designated States except US):
TUFTS-NEW ENGLAND MEDICAL CENTER
[US/US]; 750 Washington Street, Box 394, Boston, MA
02111 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BIANCHI, Diana, W. [US/US]; 4 Perry Street, Brookline, MA 02445 (US). LARRABEE, Paige, B. [US/US]; 19 Cherry Street, Malden, MA 02148 (US). LeSHANE, Erik, S. [US/US]; 131 Madbury Road, Durham, NH 03824 (US).

(74) Agent: JARRELL, Brenda, Herschbach; Choate, Hall & Stewart, Exchange Place, 53 State Street, Boston, MA 02109 (US).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

(88) Date of publication of the international search report:
9 March 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/044086 A3

(54) Title: PRENATAL DIAGNOSIS USING CELL-FREE FETAL DNA IN AMNIOTIC FLUID

(57) Abstract: The present invention relates to improved methods of prenatal diagnosis, screening, monitoring and/or testing. The inventive methods include the analysis by array-based hybridization of cell-free fetal DNA isolated from amniotic fluid. In addition to allowing the prenatal diagnosis of a variety of diseases and conditions, and the assessment of fetal characteristics such as fetal sex and chromosomal abnormalities, the new inventive methods provide substantially more information about the fetal genome in less time than it takes to perform a conventional metaphase karyotype analysis. In particular, the enhanced molecular karyotype methods provided by the present invention allow the detection of chromosomal aberrations that are not often detected prenatally such as microdeletions, microduplications and subtelomeric rearrangements.